



Operational Threats – Airborne Conflict & Runway Incursions

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Operational Threats - Airborne Conflict & Runway Incursions

- **Runway Incursions**
- **Cleared for Immediate Take-Off**
- **Take-Off or Landing Clearance Given Whilst the Runway Is Occupied**

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Runway Incursions



Runway Incursions

- In Easyjet between 1st Jan 2015 to 1st Nov 2017, we recorded 111 events classified as 'Runway Incursions'
- The Runway Incursion descriptors in our SafetyNet reporting system fall generally into the following headings:
 - 1. Loss of Braking
 - 2. Runway Incursion or activities by a Ground Vehicle
 - 3. Landing or Take Off Clearance given with the Runway Occupied
 - 4. Landing or Take Off Clearance Not Received
 - 5. Runway Aircraft Incursion (Crossing Stop Bars or Holding Points)

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We as an airline experience throughout our network

- **significant variation in interpretation of the definition of a runway incursion by different airport operators, ATC units and airlines.**
- **no real common standard applied for the determination of the severity of a runway incursion and it can be very subjective in interpretation.**

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- **ICAO Runway Incursion Definition**
- *“Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft”*
- **But how is this definition used in real life.....**

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What is meant by:

“Incorrect Presence of an aircraft, vehicle or person ” ?

- ***The unsafe, unauthorised or undesirable presence or movement of an aircraft, vehicle or pedestrian.***

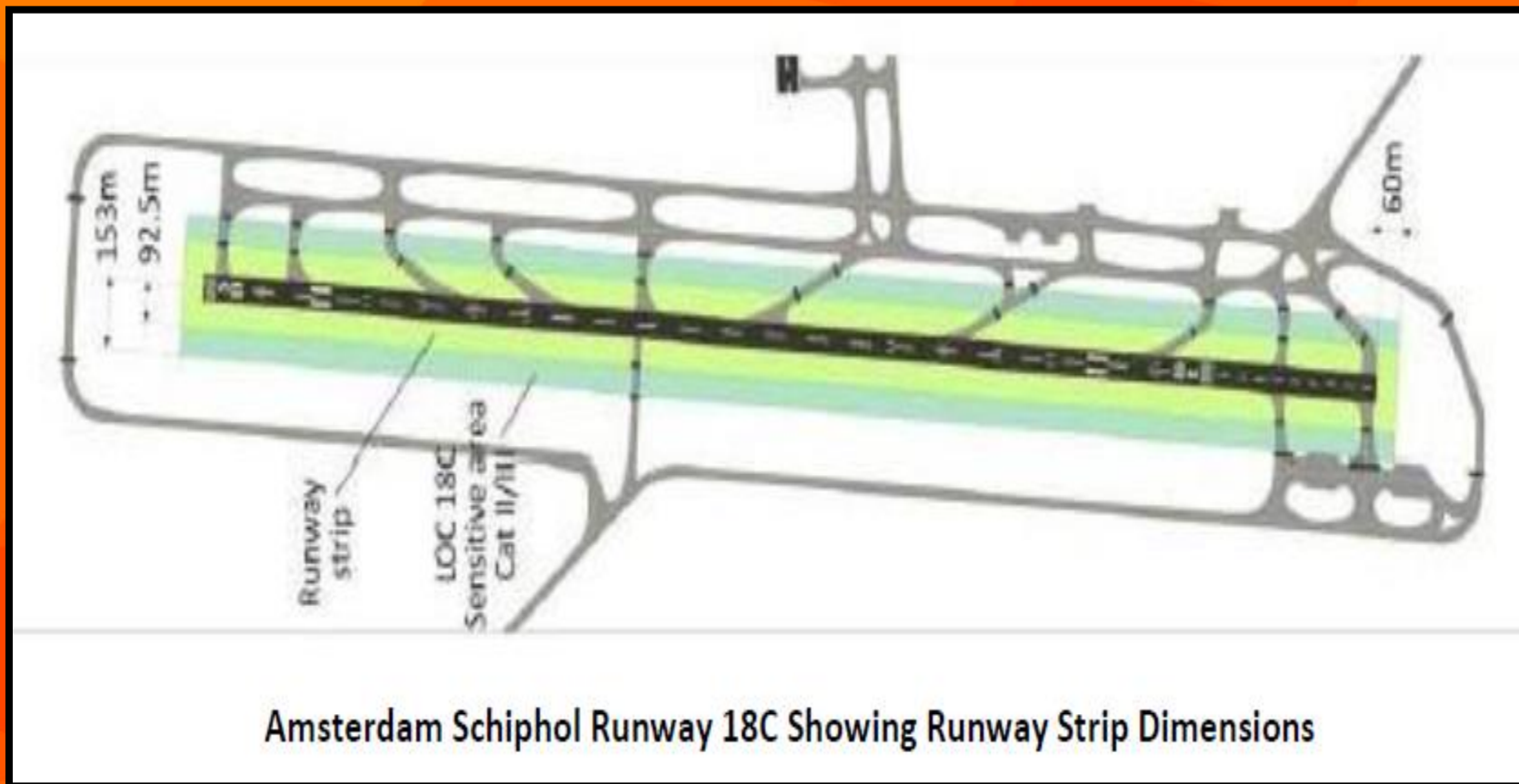
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What is meant by:

“Protected area of a surface designated for the landing and take-off of aircraft” ?

- **Generally, the protected area of a surface designated for the landing and take-off of aircraft is defined by the runway strip (also known as ‘90-metre area’) or the ILS sensitive cat II/III area when reduced or low visibility operations (LVP) are in force.**

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The runway strip (also known as '90-metre area') is defined as the area formed by 92.5 metre on either side of the runway centreline and 60 metre from the respective runway ends.

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We have defined the horizontal part of the protected area.
What is the vertical part of the “protected area”?

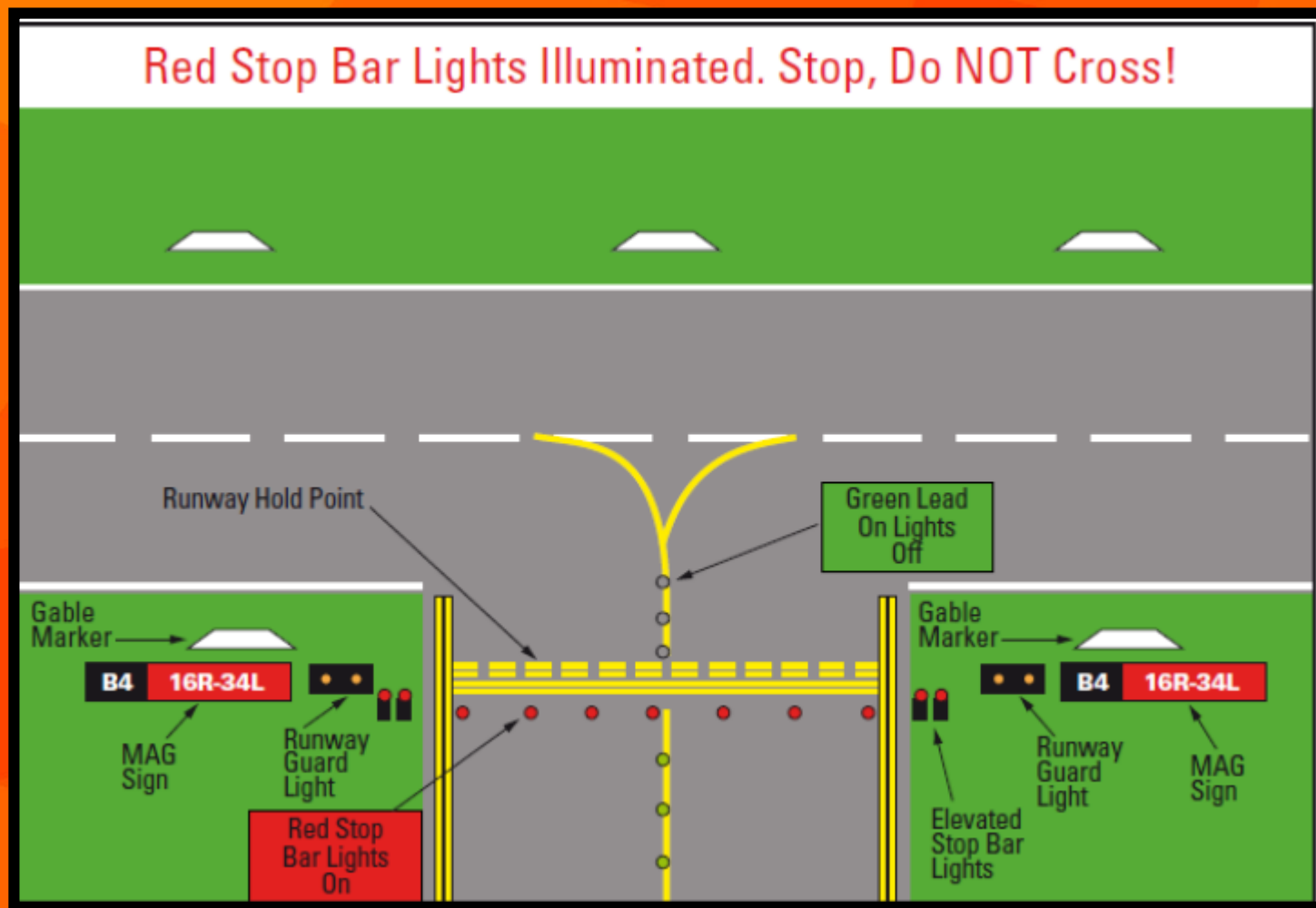
- For the vertical part of the protected area the phrase from the ICAO definition ‘*on the protected area*’ is interpreted as the physical contact of the aircraft, vehicle or person involved with the above defined geometry.
- Some ANSPs do, however, establish an artificial threshold somewhere on the approach path (e.g. 4nm, 2nm, 1nm, over the rwy threshold according to local needs) that can be the triggering point for consideration of an RI even though the aircraft is in the air (and may or may not have ATC clearance).

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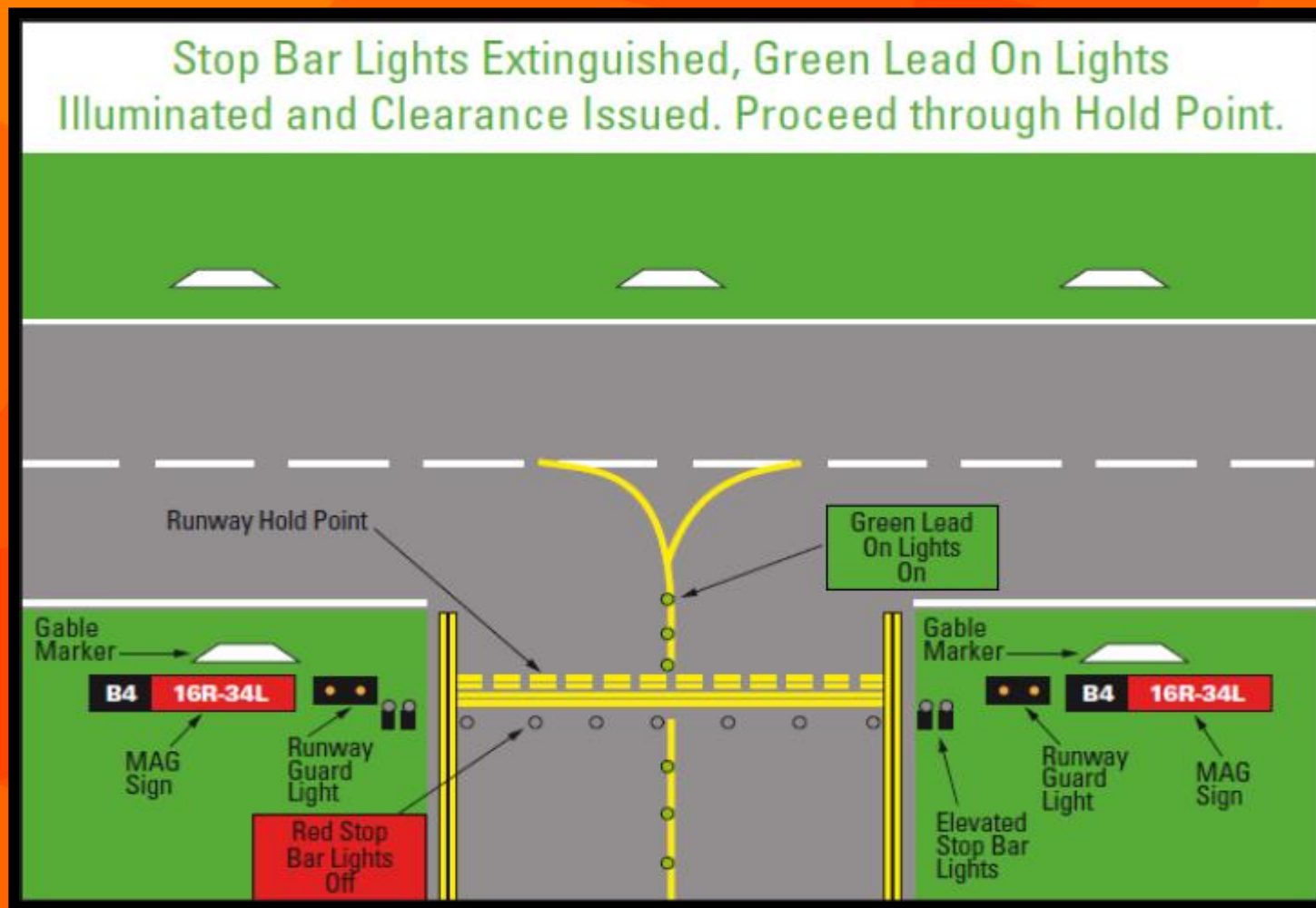
Stop Bar and Holding Point Issues

- If an aircraft or vehicle crosses a red stop bar or its assigned holding point then from the runway incursion definition mentioned, it may not in all cases be directly clear whether or not such a situation can be considered as a runway incursion.
- Throughout our network there are inconsistent local policies on the use of stop bars (e.g. low visibility ops only, H24 operation on some runways, at some airports, in some States)
- Runway-holding position markings are the primary means used to protect the integrity of the runway. Stop Bars where installed are there to support and reinforce designated positions and are not a replacement for them.

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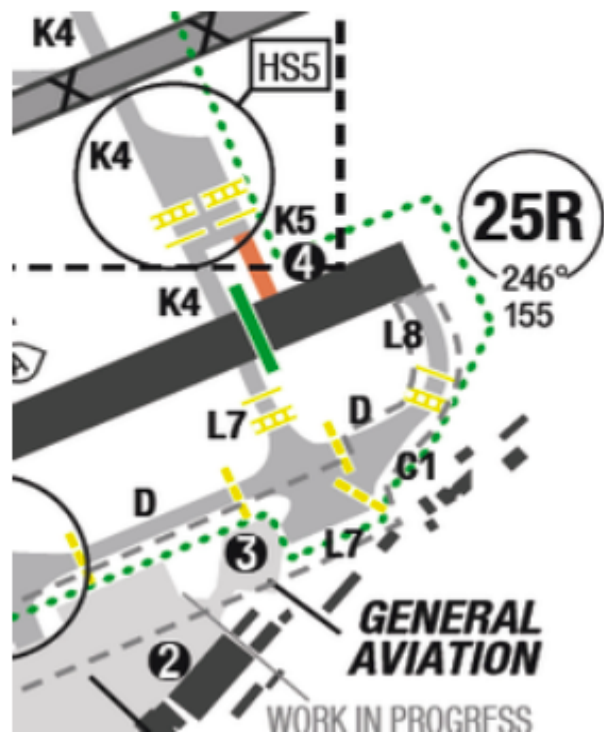
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'Crossed Stopbar' (SXF)

The summary of the report reads: 'Stopbar crossed by 10 meters. Very strong sun, positioned SSE low right in the eyes of crew. On same time a very wet taxiway due treatment for snow, giving a very strong glare from below. Cleared by ATC to hold short rwy 25R K5. Just short of K5 the secure call was made from CC making a tiny bit of disturbance. While F/O was handling this call Cpt was looking for the stopbar, but was unable to see this, and unable to see the sign on the left hand side as well due to the strong sun. AC was brought to a stop and crew was initially unsure if the stopbar was crossed, and before being able to call and tell this to ATC, ATC called back themselves confirming the crossing. A/C was aprox 10 meters past the line. Next AC (Aeroflot) was on final, told about situation and carried out uneventful landing.



- HS1 - Confusing TWY intersection east of TWY CLL.
- HS2 - Confusing TWY when crossing RWY.
- HS3 - TWY D/Entry Apron 4 "Crossing helicopter from/to HP North".
- HS4 - TWY L5 "Short distances for turns into/from TWY C, D.
- HS5 - Exceptional long distance between CAT 1 HLDG point and RWY

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ATC Response

We reported and documented the runway incursion accordingly. As far, there is no ATC contribution we can summarize the event for you.

The distance of the holding point of RWY25R (TWYK5), from runway centreline to CAT I holding point with even more than 150m is designed by the airport. That means, an overrun of the holding point must be reported as a runway incursion. The holding point and its markings are the fundamental limits of a safe runway operation.

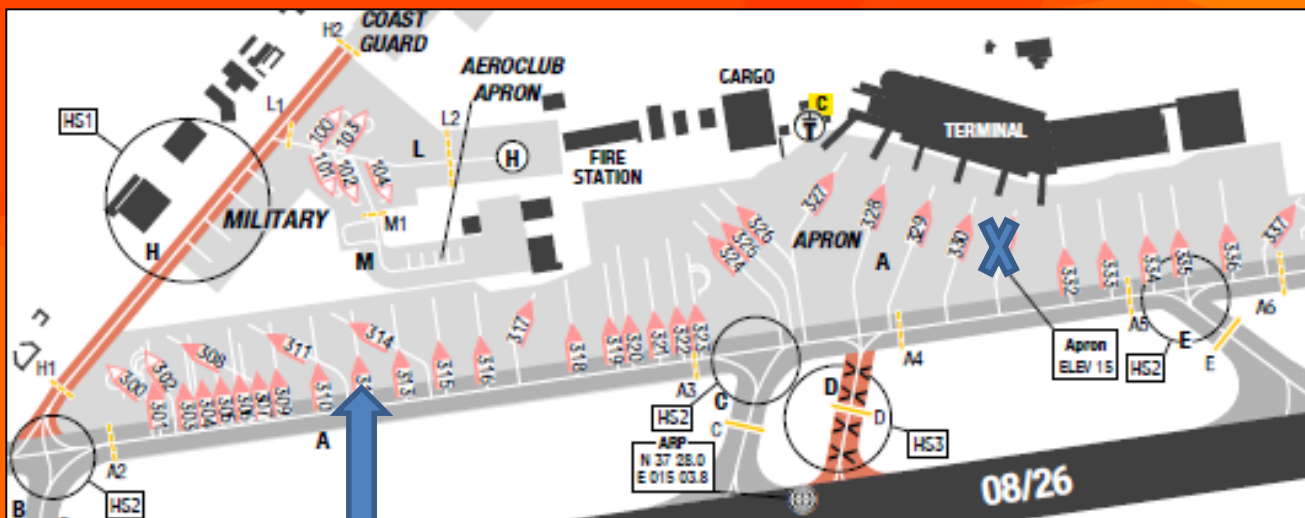
*However, your crew stopped right behind (10m) and **did not penetrate the safety strip of the runway**. Even the critical area of the GP RWY 25R has been clear.*

Taking all the facts into consideration the controller informed all aircraft on final about the position of EZYXXXX and announced a safe landing clearance for them. Would your crew have taxied more forward the controller had to announce a missed approach instruction

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Catania LICC - Runway Incursion

After completion of the after start checklist, the FO as PM asked for taxi instructions. ATC replied with "taxi holding point Charlie back track line up and wait 26". This was read back by the FO verbatim. Upon approaching holding point Charlie, the FO called ground and stated "EZY13AX approaching Charlie, entering for back track". Ground replied "Roger, contact tower 118.6". This frequency was incorrect so there was a delay contacting tower on the correct frequency, 118.7. Despite the clearance to enter and back track, the captain stopped the aircraft just beyond the C holding point so the nose wheel sat just beyond the holding point, runway side, as it felt prudent to triple check with tower they were happy we were entering. Tower then informed us we should have held at Charlie and awaited back track instructions. His demeanour was hesitant and he proceeded to tell us "its not a problem, are you going to file paperwork?". The take off proceeded IAW SOP and the flight continued without incident.



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From Italian ATC Investigations

Please find below our analysis of the event:

11:31 EZY13AX requests start-up clearance from stand 312;

11:42 LICC GND approves start-up to EZY13AX;

11:42 LICC GND clears EZY13AX for push back.

In this moment an Alitalia flight, with push back already completed ahead of EZY13AX, due to technical reason, has the necessity to return to the stand.

This implies the normal routing for Rwy 26 is not temporarily available (taxi to RHP G).

To avoid delay to Easyjet, LICC GND decides to reroute EZY13AX via C with backtrack.

11:46 EZY13AX requests taxi instructions;

11:46 LICC GND: "EZY13AX taxi holding point C expect backtrack on the runway 1026";

11:46 EZY13AX: "C backtrack Rwy 26 EZY13AX";

Giving taxi instructions, GND uses a not standard phraseology, omitting the word QNH in front of "1026".

EZY13AX reads back Rwy26 and GND does not hear back properly.

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11:46 I-SPYD (VFR traffic LICC-LICC) is cleared for touch and go Rwy26;
11:47 EZY13AX informs GND they are entering via C, backtrack Rwy26;
11:47 GND gives EZY13AX TWR frequency 118,7. No read back;
11:48 GND calls EZY13AX in order to maintain C and gives TWR frequency again.
EZY13AX does not reply; (it is reasonably to think that they are engaged in frequency change)

TWR observes EZY13AX cross Holding Point C, when I-SPYD is already at TDZ.

11:48 TWR calls I-SPYD to order a go-around due to runway incursion;
11:48 EZY13AX calls TWR;
11:48 TWR tells EZY13AX to hold position due to traffic performing a go-around.

When TWR clears the VFR traffic for touch and go, EZY13AX is not expected to enter the runway, because for both GND and TWR they are supposed to hold on RHP C.

A misunderstanding communication lead to this runway incursion, but TWR recovery action was quick and adequate.

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A pilot lands an aircraft on a runway NOTAM'd as closed.

Is this an Incursion ?

***If the runway is NOTAM'd as closed,
it is not a runway***

Cleared for Immediate Take-Off

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Cleared for Immediate Take-Off

Quite often pilots are given the instruction '*Line up, be ready for Immediate take-off*' or '*Cleared for immediate take-off, inbound traffic at X miles*' or just '*Cleared for immediate take-off*'

What does this mean to us as pilots?

How quickly are we expected to commence the take-off roll?

Are we expected to keep rolling if the clearance is given as we enter the runway

OR

Do we line up then commence the take-off roll as two separate actions?

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One recent occurrence highlights the chain of events that can unfold if our take-off roll is not commenced in a timely manner when given an immediate take-off clearance

A report was received from a local ATC Investigator whereby one of our crews was cleared for an ***immediate take-off*** but took a significant period to commence the take-off roll.

EZY XXXX was cleared to line up and to keep ready for an immediate departure.

The crew read back the line-up clearance as well as reporting being ready for an immediate departure.

As the immediate take-off clearance was issued (**EZY XXXX was fully lined up**) and informed of the position of the inbound traffic (**2.2 NM final**), the A320 took between **15 and 20 seconds** before starting its take-off roll.

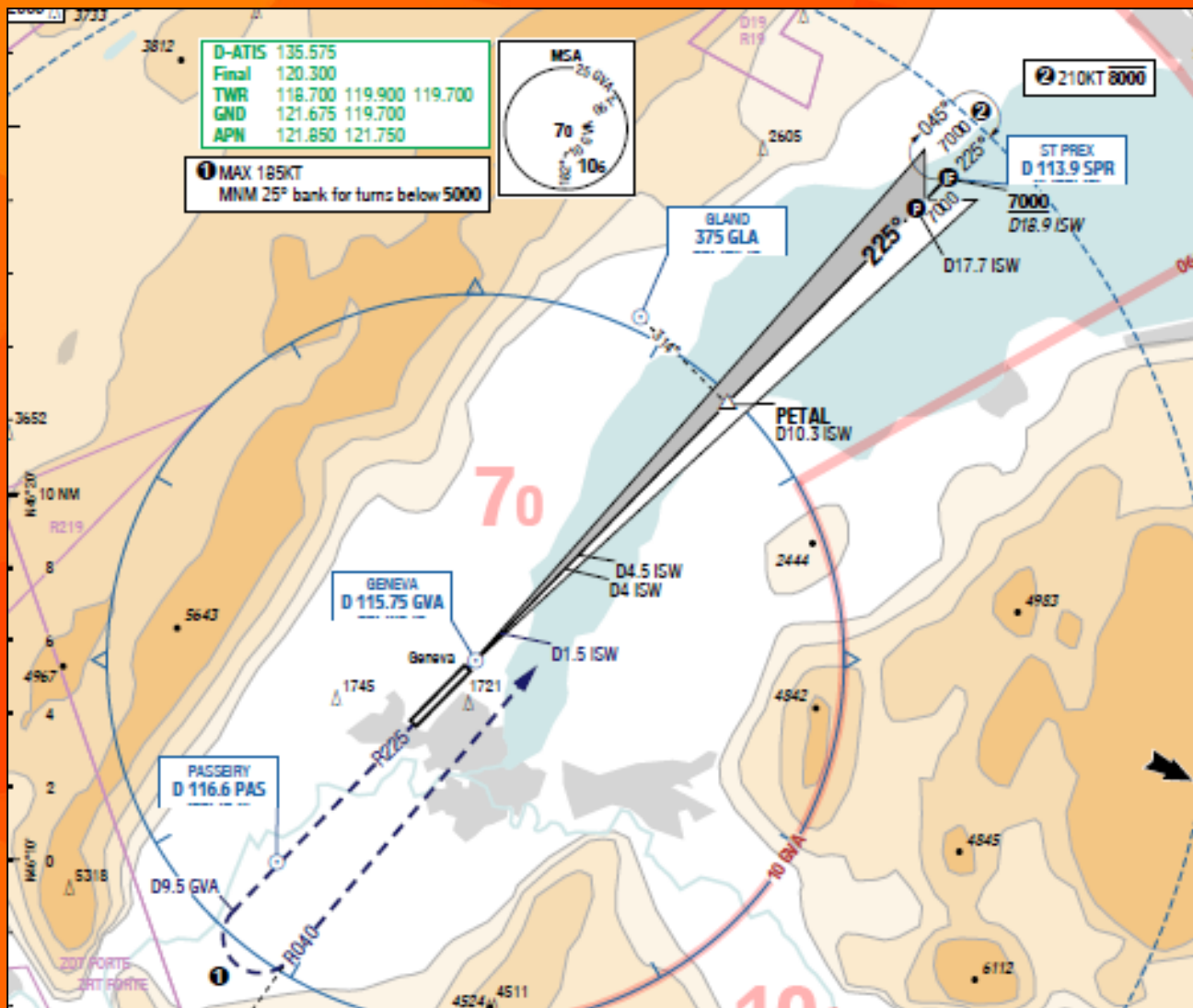
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Due to this delay, an Airbus on short final had to be cleared for a go-around while the EZY crew was instructed to abort take-off (**speed shown on our A-SMGCS radar was ~ 90 kts**) but didn't comply nor answer but reported airborne ~ 8 seconds later.

According to the ATC AMGCS, EZY **XXXX** started rolling for take-off **18 seconds** after being cleared for the immediate take-off. The SWR crew initiated a right offset to be visual with EZY **XXXX** below and were sure the left turn had been given to EZY.

The event described resulted in what is known as a '**Piggy Back**' situation which is an extremely intensive and potentially dangerous one for a controller to deal with as well as being hazardous for flight crews.

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Having consulted with our colleagues around the European ATC centres and NATS here are the expectations when issued an 'Immediate Take-Off Clearance'

When given the instruction "cleared for immediate take-off" it is expected that the pilot will act as follows:

- (1) At the holding position, taxi immediately on to the runway and commence take-off without stopping the aircraft. (Not to be given to Heavy aircraft);*
- (2) If already lined up on the runway, take-off without delay;*
- (3) If an immediate take-off is not possible, he will advise the controller.*

We only give it when we really need it and a slow roll risks a go around.

Controllers would normally ask if a pilot will be ready for an immediate take off which will help shape the controller's plan. If the aircraft has to do final checks once they are lined up they should inform ATC and not accept an "immediate" take-off clearance

Once the actual immediate take off clearance is issued the controller expects the aircraft to start moving (if they're not already) as they complete the read back. If given immediate take off without pre warning is given then commencement of the take-off roll within 10 secs is the expectation.

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**Take-Off or Landing Clearance
Given Whilst Runway
Occupied**

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Take-Off or Landing Clearance Given Whilst the Runway is Occupied

- *Late Landing Clearance, Close to a Go-Around and Poor ATC*
- *Overhanging Aircraft*
- *Uncertainty whether previous EZY aircraft had completely vacated the runway after we had departed*
- *Take off clearance given before aircraft vacated runway*
- *Landed with another aircraft still on the active runway*
- *Aircraft that just landed still vacating runway when receiving TO clearance*
- *Cleared for take-off with towed aircraft still half on runway*
- *Possible landing of aircraft on occupied runway*

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Landed with another aircraft still on the active runway

Crew Narrative:

Vectored to an ILS RWY 11 approach into ZZZ as #3.

Due to GSmini plane was catching the aircraft ahead, but still well over 3 NM separation.

Aircraft ahead to be believed a Challenger.

Landing clearance was received around minima + 50 feet with ATC saying 'aircraft ahead is vacating'

Very windy approach with wipers 'ON' due to rain.

During roll out, Captain observed aircraft still on the runway.

Challenger vacated at the end to the right, so there was no conflict at any stage

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EZY XXXX was informed by the tower controller that he would receive a late landing clearance. Shortly after, *EZY XXXX* was informed of the CL30 vacating at the far end of the runway and then *EZY XXXX* received a landing clearance.

This is the rule that our tower controllers follow under these circumstances:

*Separate an arriving aircraft from a preceding aircraft using the same runway by ensuring that the arriving aircraft does not cross the landing threshold until one of the following conditions exists: (N)
The preceding aircraft has landed and taxied off the runway.*

The preceding aircraft has landed or is over the landing runway, and

1. is at a sufficient distance from the threshold to allow the arriving aircraft to complete its landing roll without jeopardizing safety; and (N)(R)

2. the arriving aircraft is advised of the preceding aircraft's position and intentions.

The preceding aircraft has departed and is at a sufficient distance from the threshold that the arriving aircraft will not overtake it during the landing roll or conflict with it in the event of an overshoot.

Controllers are cautioned to take into consideration the aircraft types, their performance, the runway condition and other factors that may impact on the operation

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Aircraft That Just Landed Still Vacating Runway When Receiving Take-Off Clearance

Crew Narrative:

We received line up and wait clearance on rwy 28 behind landing 737 Ryanair.

When Ryanair was still vacating the runway we received our TO clearance.

Ryanair was still with aft fuselage over the runway vacating slowly.

We challenged the controller but he denied strongly.

As the Ryanair had in the mean time vacated the runway completely we decided not to go into a discussion with ATC and started our TO.

TO and entire flight was uneventful.

Has ATC a good view on the exit point of the B737 ?

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We've analysed it, ATCO was interviewed by local management and our findings are:

- *Sometimes, to keep traffic capacities – but granting the operational Safety - we need to expedite a little bit, the way the clearances are provided.*

In fact, after the preceding traffic has landed, ATCO starts to provide - slowly to permit the traffic to vacate the RWY - the specific and relevant T/O Clearance.

This was what happened also in this particular situation.

- *“We challenged the controller but he denied strongly”. From ATCO's perspective, the RWY would be well cleared the moment EASYJET flight start rolling for T/O.*

- *“Has ATC a good view on the exit point of the B737?”. Please look at the attached snapshot taken from TWR site, deriving from it, that ATCO's have total visibility not only to TWY F as well to RET RG.*

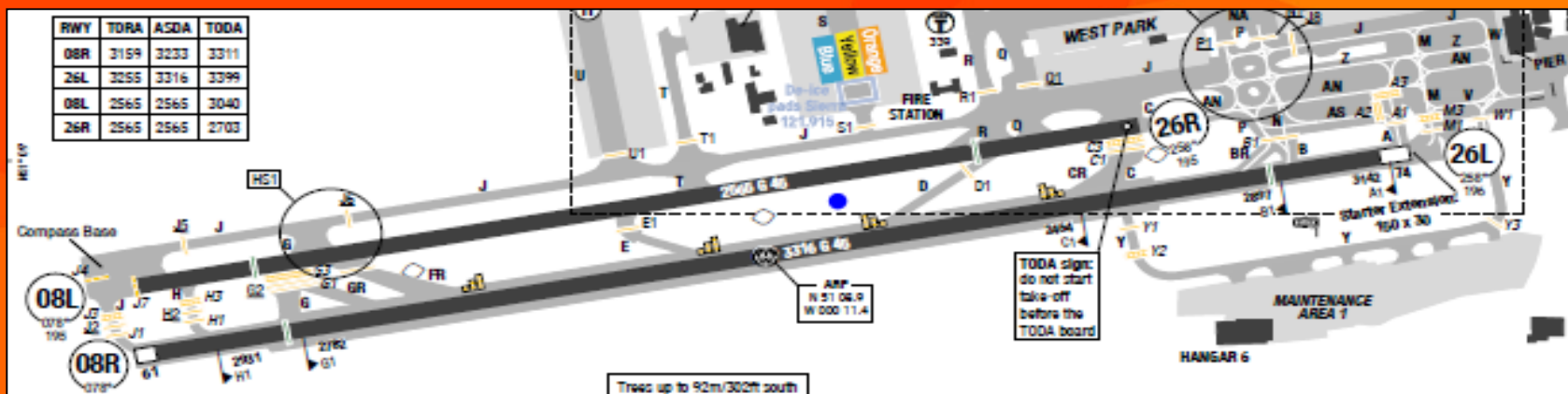


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Here is a brief summary of the 'rules of engagement' kindly provided by one of our esteemed ATCO colleagues at one of our larger UK hubs.

It is accepted that a degree of anticipation is permissible in the issuance of take-off and landing clearances. In all cases, except where a land-after clearance or conditional landing clearance is issued, take-off/landing clearances shall not be passed until the preceding aircraft or vehicle:

- *has passed the runway edge markings;*
and
- *is in motion, continuing in the required direction - a note reminding aircrew not to stop on an RET whilst vacating is included in the UK AIP.*



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- *'Unless specific procedures have been approved by the CAA, a landing aircraft shall not be permitted to cross the beginning of the runway on its final approach until a preceding aircraft, departing from the same runway, is airborne. **When aircraft are using the same runway, a landing aircraft may be permitted to touch down before a preceding landing aircraft which has landed is clear of the runway provided that:***
 - *(1) the runway is long enough to allow safe separation between the two aircraft and there is no evidence to indicate that braking may be adversely affected;*
 - *(2) it is during daylight hours;*
 - *(3) the preceding landing aircraft is not required to backtrack in order to vacate the runway;*
 - *(4) the controller is satisfied that the landing aircraft will be able to see the preceding aircraft which has landed, clearly and continuously, until it has vacated the runway; and*
 - *(5) the pilot of the following aircraft is warned. Responsibility for ensuring adequate separation rests with the pilot of the following aircraft.'*

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